STATEMENT OF BASIS

as required by LAC 33:IX.3109, for draft **Louisiana Pollutant Discharge Elimination System Permit No. LA0078484; AI 52278; PER20050001** to discharge to waters of the **State of Louisiana** as per LAC 33:IX.2311.

The **permitting authority** for the Louisiana Pollutant Discharge Elimination System (LPDES) is:

Louisiana Department of Environmental Quality
Office of Environmental Services
P. O. Box 4313
Baton Rouge, Louisiana 70821-4313

I. **THE APPLICANT IS:** Total Environmental Solutions, Inc.
Med South
1824 Ryder Drive
Baton Rouge, LA 70808

II. **PREPARED BY:** Todd Franklin

DATE PREPARED: March 22, 2006

III. **PERMIT ACTION:** reissue LPDES permit LA0078484, AI 52278; PER20050001

LPDES application received: September 15, 2005

EPA has not retained enforcement authority.

LPDES permit issued: April 1, 2001
LPDES permit expired: March 31, 2006

IV. **FACILITY INFORMATION:**

A. The application is for the discharge of treated sanitary wastewater from a privately owned treatment facility serving the Med South Medical Complex and the adjacent apartments.

B. The permit application does not indicate the receipt of industrial wastewater.

C. The facility is located west of I-49 and south of Opelousas, St. Landry Parish.

D. The treatment facility consists of extended aeration. Disinfection is by chlorination.

E. Outfall 001

Discharge Location:	Latitude 30° 28' 12" North Longitude 92° 4' 53" West
Description:	treated sanitary wastewater
Average Expected Flow:	90 hospital beds @ 200 GPD each = 18,000 GPD 335 employees @ 20 GPD each = 6,700 GPD 8 one-BR apartments @ 250 GPD each = 2,000 GPD 56 two-BR apartments @ 300 GPD each = 16,800 GPD 4 washing machines @ 400 GPD each = 1,600 GPD
Total Expected Flow:	45,100 GPD

Calculations for gallons per day were based upon figures obtained from Chapter 15 of the State of Louisiana Sanitary Code, Department of Health and Hospitals, Office of Public Health.

Type of Flow Measurement which the facility is currently using:

V-Notch Weir and/or bucket and stopwatch

V. RECEIVING WATERS:

The discharge is into an unnamed ditch; thence into Bayou Sylvain; thence into Bayou Bourbeux in segment 060801 of the Vermilion - Teche River Basin. This segment is not listed on the 303(d) list of impaired waterbodies.

The designated uses and degree of support for Segment 060801 of the Vermilion - Teche River Basin are as indicated in the table below[1/]:

Overall Degree of Support for Segment	Degree of Support of Each Use						
Partial	Primary Contact Recreation	Secondary Contact Recreation	Propagation of Fish & Wildlife	Outstanding Natural Resource Water	Drinking Water Supply	Shell fish Propagation	Agriculture
	Not Supported	Not Supported	Not Supported	N/A	N/A	N/A	Full

[1/]The designated uses and degree of support for Segment 060801 of the Vermilion - Teche River Basin are as indicated in LAC 33:IX.1123.C.3, Table (3) and the 2004 Water Quality Management Plan, Water Quality Inventory Integrated Report, Appendix A, respectively.

VI. ENDANGERED SPECIES:

The receiving waterbody, Subsegment 060801 of the Vermilion - Teche River Basin, is not listed in Section II.2 of the Implementation Strategy as requiring consultation with the U. S. Fish and Wildlife Service (FWS). This strategy was submitted with a letter dated October 21, 2005, from Watson (FWS) to Gautreaux (LDEQ). Therefore, in accordance with the Memorandum of Understanding between the LDEQ and the FWS, no further informal (Section 7, Endangered Species Act) consultation is required. It was determined that the issuance of the LPDES permit is not likely to have an adverse effect on any endangered or candidate species or the critical habitat. The effluent limitations established in the permit ensure protection of aquatic life and maintenance of the receiving water as aquatic habitat.

VII. HISTORIC SITES:

The discharge is from an existing facility location, which does not include an expansion beyond the existing perimeter. Therefore, there should be no potential effect to sites or properties on or eligible for listing on the National Register of Historic Places, and in accordance with the 'Memorandum of Understanding for the Protection of Historic Properties in Louisiana Regarding LPDES Permits' no consultation with the Louisiana State Historic Preservation Officer is required.

VIII. PUBLIC NOTICE:

Upon publication of the public notice, a public comment period shall begin on the date of publication and last for at least 30 days thereafter. During this period, any interested persons may submit written comments on the draft permit modification and may request a public hearing to clarify issues involved in the permit decision at this Office's address on the first page of the statement of basis. A request for a public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing.

Public notice published in:

Local newspaper of general circulation

Office of Environmental Services Public Notice Mailing List

For additional information, contact:

Mr. Todd Franklin
Permits Division
Department of Environmental Quality
Office of Environmental Services
P. O. Box 4313
Baton Rouge, Louisiana 70821-4313

IX. PROPOSED PERMIT LIMITS:

Subsegment 060801; Vermilion River-Headwaters at Bayou Fusilier-Bourbeaux junction to New Flanders Bridge, Hwy. 3073; is not listed on LDEQ's Final 2004 303(d) list as impaired. However, subsegment 060801 was previously listed as impaired for phosphorus, nitrogen, organic enrichment/low DO, pathogen indicators, suspended solids/turbidity/siltation, and carbofuran, for which the below TMDLs have been developed. The Department of Environmental Quality reserves the right to impose more stringent discharge limitations and/or additional restrictions in the future to maintain the water quality integrity and the designated uses of the receiving water bodies based upon additional TMDLs and/or water quality studies. The DEQ also reserves the right to modify or revoke and reissue this permit based upon any changes to established TMDLs for this discharge, or to accommodate for pollutant trading provisions in approved TMDL watersheds as necessary to achieve compliance with water quality standards.

The following TMDL's have been established for subsegment 060801:

1999 Review and Assessment of the 1987 Vermilion River Watershed TMDL for Dissolved Oxygen

This TMDL re-established that NPDES permits for individual point sources in the Vermilion Watershed should continue to be issued on the basis of flow rates as follows:

FLOW RATE	PERMIT LIMITS
greater than 25,000 gpd	May – Dec.: 10 mg/l $CBOD_5$/5 mg/l NH_3-N/5 mg/l DO Jan.- April: 20 mg/l $CBOD_5$/10 mg/l NH_3-N/5 mg/l DO
25,000 gpd or less	secondary limits year round

Therefore, this discharge will be permitted accordingly.

Vermilion River TMDL for Fecal Coliform

The *Vermilion River TMDL for Fecal Coliform* was finalized on April 5, 2001, addressing the presence of pathogen indicators in the watershed. As per this TMDL, "...there will be no change in the permit requirements based upon a wasteload allocation resulting from this TMDL." Therefore, Fecal Coliform effluent limitations will remain in this permit.

TMDL for TSS, Turbidity, and Siltation for the 15 Subsegments in the Vermilion River Basin

As per the *TMDL for TSS, Turbidity, and Siltation for the 15 Subsegments in the Vermilion River Basin*, point source loads are so small as to be insignificant, and because effective policies are in place to limit TSS discharges, no specific reductions from point sources are required. Therefore, TSS limits will remain as previously permitted.

TMDL for the Pesticide Carbofuran in the Mermentau and Vermilion-Teche River Basins

The *TMDL for the Pesticide Carbofuran in the Mermentau and Vermilion-Teche River Basins* was finalized on March 21, 2002, and states no point sources are known to discharge Carbofuran; therefore, no allocation was given to point source discharges in the Vermilion-Teche River Basin.

Final Effluent Limits:

OUTFALL 001

Final limits shall become effective on the effective date of the permit and expire on the expiration date of the permit.

Effluent Characteristic	Monthly Avg. (lbs./day)	Monthly Avg.	Weekly Avg.	Basis
$CBOD_5$				Limits are set in accordance with the *1999 Review and Assessment of the 1987 Vermilion River Watershed TMDL for Dissolved Oxygen.*
May – December	N/A*	10 mg/l	15 mg/l	
January – April	N/A*	20 mg/l	30 mg/l	
TSS				Limits are set through Best Professional Judgement (BPJ) in a manner consistent with technology based limits and the previous permit.
May – December	N/A*	15 mg/l	23 mg/l	
January - April	N/A*	20 mg/l	30 mg/l	
Ammonia-Nitrogen				Limits are set in accordance with the *1999 Review and Assessment of the 1987 Vermilion River Watershed TMDL for Dissolved Oxygen.*
May – December	N/A*	5 mg/l	10 mg/l	
January - April	N/A*	10 mg/l	20 mg/l	
Dissolved Oxygen**	---	5 mg/l	N/A	Limits are set in accordance with the *1999 Review and Assessment of the 1987 Vermilion River Watershed TMDL for Dissolved Oxygen.*

*Concentration limits are used in accordance with LAC 33:IX.2709.F.1.b which states that mass limitations are not necessary when applicable standards and limitations are expressed in other units of measurement. LAC 33:IX.709.B references LAC 33:IX.711 which express BOD_5 and TSS in terms of concentration.

**This Dissolved Oxygen limit is the lowest allowable average of daily discharges over a calendar month. When monitoring is conducted, the Dissolved Oxygen shall be analyzed immediately, as per 40 CFR 136.3.

Other Effluent Limitations:

1) ***Fecal Coliform***

The discharge from this facility is into a water body which has a designated use of Primary Contact Recreation. According to LAC 33:IX.1113.C.5.b.i, the fecal coliform standards for this water body are *200/100 ml* and *400/100 ml*. Therefore, the limits of *200/100 ml* (Monthly Average) and 400/100 ml (Weekly Average) are proposed as Fecal Coliform limits in the permit. These limits are being proposed through Best Professional Judgement in order to ensure that the water body standards are not exceeded, and due to the fact that existing facilities have demonstrated an ability to comply with these limitations using present available technology.

2) **pH**

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units at any time. (Limits as established through BPJ considering BCT for similar waste streams in accordance with LAC 33:IX.5905.C.).

3) **Solids and Foam**

There shall be no discharge of floating solids or visible foam in other than trace amounts in accordance with LAC 33:IX.1113.B.7.

X. **PREVIOUS PERMITS:**

LPDES Permit No. LA0070769: Issued: February 1, 2001
Expired: January 31, 2006

Effluent Characteristic	Discharge Limitations		Monitoring Requirements	
	Daily Avg.	Daily Max.	Measurement Frequency	Sample Type
Flow	Report	Report	1/week	Measure
$CBOD_5$				
April-November	10 mg/l	15 mg/l	2/month	Grab
December-March	20 mg/l	30 mg/l	2/month	Grab
TSS				
April-November	15 mg/l	23 mg/l	2/month	Grab
December-March	20 mg/l	30 mg/l	2/month	Grab
Ammonia-Nitrogen				
April-November	5 mg/l	10 mg/l	2/month	Grab
December-March	10 mg/l	20 mg/l	2/month	Grab
Dissolved Oxygen	5 mg/l minimum		2/month	Grab

Fecal Coliform Colonies/100 ml	200	400	2/month	Grab
TRC	Report	Report	2/month	Grab
pH	Range (6.0 su – 9.0 su)		2/month	Grab

The TRC reporting requirement has been removed from this draft permit. Calculations based on the last two years of data as reported on the DMRs revealed that no Water-Quality Based Limit was required. See the attached calculations for more information.

XI. ENFORCEMENT AND SURVEILLANCE ACTIONS:

A) Inspections

A review of the files indicates the following most recent inspection was performed for this facility.

Date – November 1, 2004
Inspector - LDEQ
Findings and/or Violations –

1. The facility is an above ground extended aerator unit. Both wet well pumps are operational. Both motors for the aerator are operational.
2. Chlorine tablets were located in the contact tubes.
3. Flow is measured by a template on the contact Chamber.
4. Effluent was clear.
5. Inspector was unable to locate the outfall pipe (underwater).
6. The review of the Discharge Monitoring Reports from 10/1/2003 through 9/30/2004 revealed the following:
   The effluent did not meet the minimum monthly average for Dissolved Oxygen three times during the review period. The causes of the lack of oxygen included that dissolved oxygen improvements were under way and a lack of air in the chlorine contact chamber. The corrective actions included installing five air diffusers and increasing the air supply to the chamber. Also during the review period, the monthly average TSS limitation was exceeded five times and the weekly average TSS limitation was exceeded once. The cause of the exceedances included inadequate chlorine contact chamber maintenance and the chamber needing to be pumped out. Maintenance of the chlorine contact chamber was increased and it was scheduled to be pumped out.
   No spills were noted at the facility from 10/1/2003 through 11/1/2004.

B) Compliance and/or Administrative Orders

A review of the files indicates that no recent enforcement actions have been administered against this facility.

C) DMR Review

A review of the discharge monitoring reports for the period beginning January 2004 through December 2005 has revealed the following violations:

Parameter	Outfall	Period of Excursion	Permit Limit	Reported Quantity
TSS, Monthly Avg.	001	January 2004	20 mg/l	28.45 mg/l
TSS, Weekly Avg.	001	January 2004	30 mg/l	30.40 mg/l

TSS, Monthly Avg.	001	February 2004	20 mg/l	20.40 mg/l
DO, Monthly Avg.	001	April 2004	5 mg/l minimum	3.71 mg/l
DO, Monthly Avg.	001	June 2004	5 mg/l minimum	4.90 mg/l
TSS, Monthly Avg.	001	July 2004	15 mg/l	15.15 mg/l
TSS, Monthly Avg.	001	November 2004	15 mg/l	23.80 mg/l
TSS, Weekly Avg.	001	November 2004	23 mg/l	36.80 mg/l
DO, Monthly Avg.	001	July 2005	5 mg/l minimum	4.55 mg/l
DO, Monthly Avg.	001	August 2005	5 mg/l minimum	4.59 mg/l

XII. ADDITIONAL INFORMATION:

The Department of Environmental Quality reserves the right to impose more stringent discharge limitations and/or additional restrictions in the future to maintain the water quality integrity and the designated uses of the receiving water bodies based upon additional water quality studies and/or TMDLs. The DEQ also reserves the right to modify or revoke and reissue this permit based upon any changes to established TMDLs for this discharge, or to accommodate for pollutant trading provisions in approved TMDL watersheds as requested by the permittee and/or as necessary to achieve compliance with water quality standards. Therefore, prior to upgrading or expanding this facility, the permittee should contact the Department to determine the status of the work being done to establish future effluent limitations and additional permit conditions.

The **Monitoring Requirements, Sample Types, and Frequency of Sampling** for this facility shall be as follows:

Effluent Characteristics	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow	1/week	Measure
$CBOD_5$	2/month	Grab
Total Suspended Solids	2/month	Grab
Ammonia-Nitrogen	2/month	Grab
Dissolved Oxygen	2/month	Grab
Fecal Coliform Bacteria	2/month	Grab
pH	2/month	Grab

XIII TENTATIVE DETERMINATION:

On the basis of preliminary staff review, the Department of Environmental Quality has made a tentative determination to reissue a permit for the discharge described in this Statement of Basis.

XIV REFERENCES:

Louisiana Water Quality Management Plan / Continuing Planning Process, Vol. 8, "Wasteload Allocations / Total Maximum Daily Loads and Effluent Limitations Policy," Louisiana Department of Environmental Quality, 2005.

Louisiana Water Quality Management Plan / Continuing Planning Process, Vol. 5, "Water Quality Inventory Section 305(b) Report," Louisiana Department of Environmental Quality, 1998.

Louisiana Administrative Code, Title 33 - Environmental Quality, Part IX - Water Quality Regulations, Chapter 11 - "Louisiana Surface Water Quality Standards," Louisiana Department of Environmental Quality, 2004.

Louisiana Administrative Code, Title 33 - Environmental Quality, Part IX - Water Quality Regulations, Subpart 2 - "The LPDES Program," Louisiana Department of Environmental Quality, 2004.

Low-Flow Characteristics of Louisiana Streams, Water Resources Technical Report No. 22, United States Department of the Interior, Geological Survey, 1980.

Index to Surface Water Data in Louisiana, Water Resources Basic Records Report No. 17, United States Department of the Interior, Geological Survey, 1989.

LPDES Permit Application to Discharge Wastewater, Total Environmental Solutions, Inc., Med South, September 15, 2005.

APPENDIX B-1

Water Quality Screen

wqsmodn wk4	Date:	03/22/06	Appendix B-1				Page	1
Developer: Bruce Fielding	Time:	10:00 AM						
Software: Lotus 4.0			LA0078484					
Revision date: 10/22/99								
	Water Quality Screen for		TESI / Med South					
Input variables:								
Receiving Water Characteristics:			Dilution:		Toxicity Dilution Series:			
			ZID Fs =	0.1	Biomonitoring dilution:		0.41100884	
Receiving Water Name=	unnamed ditch; thence into Bayou Sylvain; thence into Bayou Bourbeux				Dilution Series Factor:		0.75	
Critical flow (Qr) cfs=	0.1		MZ Fs =	1				
Harm. mean/avg tidal cfs=			Critical Qr (MGD)=	0.06463			Percent Effluent	
Drinking Water=1 HHNPCR=2			Harm. Mean (MGD)=	0.06463	Dilution No. 1		54.801%	
Marine, 1=y, 0=n			ZID Dilution =	0.874658185	Dilution No. 2		41.1009%	
Rec. Water Hardness=			MZ Dilution =	0.41100884	Dilution No. 3		30.8257%	
Rec. Water TSS=			HHnc Dilution=	0.41100884	Dilution No. 4		23.1192%	
Fisch/Specific=1,Stream=0			HHc Dilution=	0.41100884	Dilution No. 5		17.3394%	
Diffuser Ratio=			ZID Upstream =	0.143303769				
			MZ Upstream =	1.433037694	Partition Coefficients; Dissolved-->Total			
Effluent Characteristics:			MZhhnc Upstream=	1.433037694				
Permittee=	TESI / Med South				METALS	FW		
Permit Number=	LA0078484		MZhhc Upstream=	1.433037694	Total Arsenic	1.893801826		
Facility flow (Qef),MGD=	0.0451		ZID Hardness=	---	Total Cadmium	3.965240965		
			MZ Hardness=	---	Chromium III	4.947655785		
Outfall Number =	001		ZID TSS=	---	Chromium VI	1		
Eff. data, 2=lbs/day			MZ TSS=	---	Total Copper	2.892488893		
MQL, 2=lbs/day					Total Lead	5.437700939		
Effluent Hardness=	N/A		Multipliers:		Total Mercury	3.100864284		
Effluent TSS=	N/A		WLAa --> LTAa	0.32	Total Nickel	2.318852054		
WQBL ind. 0=y, 1=n			WLAc --> LTAc	0.53	Total Zinc	3.494077894		
Acute/Chr. ratio 0=n, 1=y			LTA a,c-->WQBL avg	1.31				
Aquatic,acute only1=y,0=n			LTA a,c-->WQBL max	3.11	Aquatic Life, Dissolved			
			LTA h --> WQBL max	2.38	Metal Criteria, ug/L			
Page Numbering/Labeling			WQBL-limit/report	2.13	METALS	ACUTE	CHRONIC	
Appendix	Appendix B-1		WLA Fraction	1	Arsenic	360	190	
Page Numbers 1=y, 0=n	1		WQBL Fraction	1	Cadmium	7.053274171	0.381922068	
Input Page # 1=y, 0=n	1				Chromium III	557.9443915	66.50381408	
			Conversions:		Chromium VI	16	11	
Fischer/Site Specific inputs:			ug/L-->lbs/day Qef	0.000376134	Copper	5.19878426	3.913880716	
Pipe=1,Canal=2,Specific=3			ug/L-->lbs/day Qeo	0	Lead	13.98001661	0.544781177	
Pipe width, feet			ug/L-->lbs/day Qr	0.000834	Mercury	2.4	0.012	
ZID plume dist., feet			lbs/day-->ug/L Qeo	2658.626979	Nickel	438.9427295	48.79700548	
MZ plume dist., feet			lbs/day-->ug/L Qef	2658.626979	Zinc	36.15276695	32.74510504	
HHnc plume dist., feet			diss-->tot 1=y0=n	1				
HHc plume dist., feet			Cu diss->tot1=y0=n	1	Site Specific Multiplier Values:			
			cfs-->MGD	0.6463	CV =		---	
Fischer/site specific dilutions:					N =		---	
ID Dilution =	---		Receiving Stream:		WLAa --> LTAa		---	
F/specific MZ Dilution =	---		Default Hardness=	25	WLAc --> LTAc		---	
F/specific HHnc Dilution=	---		Default TSS=	10	LTA a,c-->WQBL avg		---	
F/specific HHc Dilution=	---				LTA a,c-->WQBL max		---	
					LTA h --> WQBL max		---	

Appendix B-1 Page 2
TESI / Med South
LA0078484

(*1)	(*2)	(*3)	(*4)	(*5)	(*6)	(*7)	(*8)	(*9)	(*10)	(*11)
Toxic	Cu	Effluent	Effluent	MQL	Effluent	95th %	Numerical Criteria			HH
Parameters	Instream	/Tech	/Tech		1=No 95%	estimate	Acute	Chronic	HHNDW	Carcinogen
	Conc.	(Avg)	(Max)		0=95 %	Non-Tech	FW	FW		Indicator
	ug/L	ug/L	ug/L	ug/L		ug/L	ug/L	ug/L	ug/L	"C"
NONCONVENTIONAL										
Total Phenols (4AAP)				5			700	350	50	
3-Chlorophenol				10						
4-Chlorophenol				10			383	192		
2,3-Dichlorophenol				10						
2,5-Dichlorophenol				10						
2,6-Dichlorophenol				10						
3,4-Dichlorophenol				10						
2,4-Dichlorophenocy-										
acetic acid (2,4-D)				---						
2-(2,4,5-Trichlorophen-										
oxy) propionic acid										
(2,4,5-TP, Silvex)				---						
METALS AND CYANIDE										
Total Arsenic				10			681.7686572	359.8223469		
Total Cadmium				1			27.96793168	1.514413029		
Chromium III				10			2760.516796	329.0379804		
Chromium VI				10			16	11		
Total Copper				10			15.03742573	11.3208565		
Total Lead				5			76.01914946	2.962357118		
Total Mercury				0.2			7.442074282	0.037210371		
Total Nickel				40			1017.84325	113.1530364		
Total Zinc				20			126.3205838	114.4139476		
Total Cyanide				20			45.9	5.4	12844	
DIOXIN										
2,3,7,8 TCDD; dioxin				1.00E-05					7.20E-07	C
VOLATILE COMPOUNDS										
Benzene				10			2249	1125	12.5	C
Bromoform				10			2930	1465	34.7	C
Bromodichloromethane				10					3.3	C
Carbon Tetrachloride				10			2730	1365	1.2	C
Chloroform				10			2890	1445	70	C
Dibromochloromethane				10					5.08	C
1,2-Dichloroethane(EDC)				10			11800	5900	6.8	C
1,1-Dichloroethylene				10			1160	580	0.58	C
1,3-Dichloropropylene				10			606	303	162.79	
Ethylbenzene				10			3200	1600	8100	
Methyl Chloride				50			55000	27500		
Methylene Chloride				20			19300	9650	87	C
1,1,2,2-Tetrachloro-										
ethane				10			932	466	1.8	C

(*1)	(*12)	(*13)	(*14)	(*15)	(*16)	(*17)	(*18)	(*19)	(*20)	(*21)	(*22)	(*23)
Toxic	WLAa	WLAc	WLAh	LTAa	LTAc	LTAh	Limiting	WQBL	WQBL	WQBL	WQBL	Need
Parameters	Acute	Chronic	HHNDW	Acute	Chronic	HHNDW	A,C,HH	Avg	Max	Avg	Max	WQBL?
								001	001	001	001	
	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	lbs/day	lbs/day	
NONCONVENTIONAL												
Total Phenols (4AAP)	800.3126386	851.5631929	121.6518847	256.1000443	451.3284922	121.6518847	121.6518847	121.6518847	289.5314856	0.04575741	0.108902636	no
3-Chlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
4-Chlorophenol	437.8853437	467.1432373	---	140.12331	247.5859157	---	140.12331	183.5615361	435.783494	0.069043735	0.163912989	no
2,3-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
2,5-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
2,6-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
3,4-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
2,4-Dichlorophenocy-												
acetic acid (2,4-D)	---	---	---	---	---	---	---	---	---	---	---	no
2-(2,4,5-Trichlorophen-												
oxy) propionic acid												
(2,4,5-TP, Silvex)	---	---	---	---	---	---	---	---	---	---	---	no
METALS AND CYANIDE												
Total Arsenic	779.4686757	875.4613331	---	249.4299762	463.9945065	---	249.4299762	326.7532688	775.727226	0.122903014	0.291777384	no
Total Cadmium	31.97584171	3.684623983	---	10.23226935	1.95285071	---	1.95285071	2.558234431	6.073365711	0.000962239	0.002284399	no
Chromium III	3156.109258	800.5618091	---	1009.954963	424.2977588	---	424.2977588	555.8300641	1319.56603	0.209066585	0.496333649	no
Chromium VI	18.29286031	26.76341463	---	5.853715299	14.18460976	---	5.853715299	7.668367042	18.20505458	0.002884334	0.00684754	no
Total Copper	17.19234552	27.54407059	---	5.501550566	14.59835741	---	5.501550566	7.207031242	17.10982226	0.002710809	0.006435586	no
Total Lead	86.91298012	7.207526531	---	27.81215364	3.819989061	---	3.819989061	5.004185671	11.88016598	0.001882244	0.004468534	no
Total Mercury	8.508551579	0.090534236	---	2.722736505	0.047983145	---	0.047983145	0.06285792	0.149227582	2.3643E-05	5.61296E-05	no
Total Nickel	1163.704024	275.3056027	---	372.3852877	145.9119694	---	145.9119694	191.14468	453.7862249	0.071896013	0.170684428	no
Total Zinc	144.4227996	278.3734473	---	46.21529587	147.5379271	---	46.21529587	60.54203759	143.7295702	0.022771919	0.054061578	no
Total Cyanide	52.47764302	13.13840355	31249.93614	16.79284576	6.96335388	31249.93614	6.96335388	9.121993583	21.65603057	0.003431092	0.008145569	no
DIOXIN												
2,3,7,8 TCDD; dioxin	---	---	1.75E-06	---	---	1.75E-06	1.75E-06	1.75E-06	4.17E-06	6.59E-10	1.57E-09	no
VOLATILE COMPOUNDS												
Benzene	2571.290177	2737.167406	30.41297118	822.8128568	1450.698725	30.41297118	30.41297118	30.41297118	72.3828714	0.011439353	0.027225659	no
Bromoform	3349.880044	3564.400222	84.42640798	1071.961614	1889.132118	84.42640798	84.42640798	84.42640798	200.934851	0.031755643	0.075578429	no
Bromodichloromethane	---	---	8.02902439	---	---	8.02902439	8.02902439	8.02902439	19.10907805	0.003019989	0.007187574	no
Carbon Tetrachloride	3121.21929	3321.096452	2.919645233	998.7901729	1760.18112	2.919645233	2.919645233	2.919645233	6.948755654	0.001098178	0.002613663	no
Chloroform	3304.147894	3515.739468	170.3126386	1057.327326	1863.341918	170.3126386	170.3126386	170.3126386	405.3440798	0.064060374	0.15246369	no
Dibromochloromethane	---	---	12.35983149	---	---	12.35983149	12.35983149	12.35983149	29.41639894	0.004648953	0.011064508	no
1,2-Dichloroethane(EDC)	13490.98448	14354.92239	16.54465632	4317.115033	7608.108869	16.54465632	16.54465632	16.54465632	39.37628204	0.006223008	0.014810758	no
1,1-Dichloroethylene	1326.232373	1411.161863	1.411161863	424.3943592	747.9157871	1.411161863	1.411161863	1.411161863	3.358565233	0.000530786	0.001263271	no
1,3-Dichloropropylene	692.8420843	737.2104213	396.0742062	221.709467	390.7215233	396.0742062	221.709467	290.4394017	689.5164423	0.109244134	0.259350577	no
Ethylbenzene	3658.572062	3892.86031	19707.60532	1170.74306	2063.215965	19707.60532	1170.74306	1533.673408	3641.010916	0.576866714	1.369508	no
Methyl Chloride	62881.70732	66908.53659	---	20122.14634	35461.52439	---	20122.14634	26360.01171	62579.87512	9.914896644	23.53841875	no
Methylene Chloride	22065.76275	23478.81375	211.6742794	7061.04408	12443.77129	211.6742794	211.6742794	211.6742794	503.7847849	0.079617893	0.189490586	no
1,1,2,2-Tetrachloro-												
ethane	1065.559113	1133.795565	4.379467849	340.9789162	600.9116497	4.379467849	4.379467849	4.379467849	10.42313348	0.001647267	0.003920495	no

Appendix B-1
TESI / Med South
LA0078484

(*1)	(*2)	(*3)	(*4)	(*5)	(*6)	(*7)	(*8)	(*9)	(*10)	(*11)
Toxic	Cu	Effluent	Effluent	MQL	Effluent	95th %	Numerical Criteria			HH
Parameters	Instream	/Tech	/Tech		1=No 95%	estimate	Acute	Chronic	HHNDW	Carcinogen
	Conc.	(Avg)	(Max)		0=95 %	Non-Tech	FW	FW		Indicator
	ug/L	ug/L	ug/L	ug/L		ug/L	ug/L	ug/L	ug/L	"C"
VOLATILE COMPOUNDS (cont'd)										
Tetrachloroethylene				10			1290	645	2.5	C
Toluene				10			1270	635	46200	
1,1,1-Trichloroethane				10			5280	2640		
1,1,2-Trichloroethane				10			1800	900	6.9	C
Trichloroethylene				10			3900	1950	21	C
Vinyl Chloride				10					35.8	C
ACID COMPOUNDS										
2-Chlorophenol				10			258	129	126.4	
2,4-Dichlorophenol				10			202	101	232.6	
BASE NEUTRAL COMPOUNDS										
Benzidine				50			250	125	0.00017	C
Hexachlorobenzene				10					0.00025	C
Hexachlorabutadiene				10			5.1	1.02	0.11	C
PESTICIDES										
Aldrin				0.05			3		0.0004	C
Hexachlorocyclohexane										
(gamma BHC, Lindane)				0.05			5.3	0.21	0.2	C
Chlordane				0.2			2.4	0.0043	0.00019	C
4,4'-DDT				0.1			1.1	0.001	0.00019	C
4,4'-DDE				0.1			52.5	10.5	0.00019	C
4,4'-DDD				0.1			0.03	0.006	0.00027	C
Dieldrin				0.1			2.5	0.0019	0.00005	C
Endosulfan				0.1			0.22	0.056	0.64	
Endrin				0.1			0.18	0.0023	0.26	
Heptachlor				0.05			0.52	0.0038	0.00007	C
Toxaphene				5			0.73	0.0002	0.00024	C
Other Parameters:										
Fecal Colif. (col/100ml)										
Chlorine		0.001150122			0	0.00244976	19	11		
Ammonia										
Chlorides										
Sulfates										

(*1)	(*12)	(*13)	(*14)	(*15)	(*16)	(*17)	(*18)	(*19)	(*20)	(*21)	(*22)	(*23)
Toxic	WLAa	WLAc	WLAh	LTAa	LTAc	LTAh	Limiting	WQBL	WQBL	WQBL	WQBL	Need
Parameters	Acute	Chronic	HHNDW	Acute	Chronic	HHNDW	A,C,HH	Avg	Max	Avg	Max	WQBL?
								001	001	001	001	
	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	lbs/day	lbs/day	
Tetrachloroethylene	1474.861863	1569.309313	6.082594235	471.955796	831.7339357	6.082594235	6.082594235	6.082594235	14.47657428	0.002287871	0.005445132	no
Toluene	1451.995787	1544.978936	112406.3415	464.6386519	818.8388359	112406.3415	464.6386519	608.676634	1445.026207	0.228943977	0.543523487	no
1,1,1-Trichloroethane	6036.643902	6423.219512	---	1931.726049	3404.306341	---	1931.726049	2530.561124	6007.668012	0.951830078	2.2596882	no
1,1,2-Trichloroethane	2057.946785	2189.733925	16.78796009	658.5429712	1160.55898	16.78796009	16.78796009	16.78796009	39.95534501	0.006314523	0.015028564	no
Trichloroethylene	4458.884701	4744.423503	51.09379157	1426.843104	2514.544457	51.09379157	51.09379157	51.09379157	121.6032239	0.019218112	0.045739107	no
Vinyl Chloride	---	---	87.10274945	---	---	87.10274945	87.10274945	87.10274945	207.3045437	0.032762306	0.077974287	no
ACID COMPOUNDS												
2-Chlorophenol	294.9723725	313.8618625	307.5359645	94.3911592	166.3467871	307.5359645	94.3911592	123.6524186	293.5565051	0.046509879	0.110416582	no
2,4-Dichlorophenol	230.9473614	245.7368071	565.9245676	73.90315565	130.2405078	565.9245676	73.90315565	96.81313391	229.8388141	0.036414711	0.086450192	no
BASE NEUTRAL COMPOUNDS												
Benzidine	285.8259424	304.1297118	0.000413616	91.46430155	161.1887472	0.000413616	0.000413616	0.000413616	0.000984407	1.55575E-07	3.70269E-07	no
Hexachlorobenzene	---	---	0.000608259	---	---	0.000608259	0.000608259	0.000608259	0.001447657	2.28787E-07	5.44513E-07	no
Hexachlorabutadiene	5.830849224	2.481698448	0.267634146	1.865871752	1.315300177	0.267634146	0.267634146	0.267634146	0.636969268	0.000100666	0.000239586	no
PESTICIDES												
Aldrin	3.429911308	---	0.000973215	1.097571619	---	0.000973215	0.000973215	0.000973215	0.002316252	3.66059E-07	8.71221E-07	no
Hexachlorocyclohexane												
(gamma BHC, Lindane)	6.059509978	0.510937916	0.486607539	1.939043193	0.270797095	0.486607539	0.270797095	0.354744195	0.842178967	0.000133431	0.000316772	no
Chlordane	2.743929047	0.010462062	0.000462277	0.878057295	0.005544893	0.000462277	0.000462277	0.000462277	0.00110022	1.73878E-07	4.1383E-07	no
4,4'-DDT	1.257634146	0.002433038	0.000462277	0.402442927	0.00128951	0.000462277	0.000462277	0.000462277	0.00110022	1.73878E-07	4.1383E-07	no
4,4'-DDE	60.02344789	25.54689579	0.000462277	19.20750333	13.53985477	0.000462277	0.000462277	0.000462277	0.00110022	1.73878E-07	4.1383E-07	no
4,4'-DDD	0.034299113	0.014598226	0.00065692	0.010975716	0.00773706	0.00065692	0.00065692	0.00065692	0.00156347	2.4709E-07	5.88074E-07	no
Dieldrin	2.858259424	0.004622772	0.000121652	0.914643016	0.002450069	0.000121652	0.000121652	0.000121652	0.000289531	4.57574E-08	1.08903E-07	no
Endosulfan	0.251526829	0.136250111	1.557144124	0.080488585	0.072212559	1.557144124	0.072212559	0.094598452	0.224581058	3.55817E-05	8.44726E-05	no
Endrin	0.205794678	0.005595987	0.6325898	0.065854297	0.002965873	0.6325898	0.002965873	0.003885294	0.009223865	1.46139E-06	3.46941E-06	no
Heptachlor	0.59451796	0.009245543	0.000170313	0.190245747	0.004900138	0.000170313	0.000170313	0.000170313	0.000405344	6.40604E-08	1.52464E-07	no
Toxaphene	0.834611752	0.000486608	0.000583929	0.267075761	0.000257902	0.000583929	0.000257902	0.000337852	0.000802075	1.27077E-07	3.01688E-07	no
Other Parameters:												
Fecal Colif. (col/100ml)	---	---	---	---	---	---	---	---	---	---	---	no
Chlorine	21.72277162	26.76341463	---	6.951286918	14.18460976	---	6.951286918	9.106185863	21.61850231	0.003425146	0.008131454	no
Ammonia	---	---	---	---	---	---	---	---	---	---	---	no
Chlorides	---	---	---	---	---	---	---	---	---	---	---	no
Sulfates	---	---	---	---	---	---	---	---	---	---	---	no

APPENDIX B-2

Documentation and Explanation of
Water Quality Screen and
Associated Lotus Spreadsheet

APPENDIX B-2
LA0078484/AI 52278/PER20050001

Documentation and Explanation of Water Quality Screen and Associated Lotus Spreadsheet

Each reference column is marked by a set of parentheses enclosing a number and asterisk, for example (*1) or (*19). These columns represent inputs, existing data sets, calculation points, and results for determining Water Quality Based Limits for an effluent of concern. The following represents a summary of information used in calculating the water quality screen:

Receiving Water Characteristics:

Receiving Water: unnamed ditch; thence into Bayou Sylvain; thence into Bayou Bourbeux
Critical Flow, Qrc (cfs): 0.1 cfs
Harmonic Mean Flow, Qrh (cfs): cfs
Segment(s) No.: 060801
Receiving Stream Hardness: mg/l
Receiving Stream TSS: mg/l
MZ Stream Factor, Fs: 1.0 cfs
Plume distance, Pf: N/A

Effluent Characteristics:

Company: Total Environmental Solutions, Inc. / Med South
Facility flow, Qe (MGD): 0.0451 MGD
Effluent Hardness: N/A
Effluent TSS: N/A
Pipe/canal width, Pw: N/A
Permit Number: LA0078484

Variable Definition:

Qrc, critical flow of receiving stream: 0.1 cfs
Qrh, harmonic mean flow of the receiving stream, cfs
Pf =Allowable plume distance in feet, specified in LAC 33.IX.1115.D
Pw = Pipe width or canal width in feet
Qe, total facility flow, 0.0451 MGD
Fs, stream factor from LAC.IX.33.11 (1 for harmonic mean flow)
Cu, ambient concentration, ug/L
Cr, numerical criteria from LAC.IX.1113, Table 1
WLA, wasteload allocation
LTA, long term average calculations
WQBL, effluent water quality based limit
ZID, Zone of Initial Dilution in % effluent
MZ, Mixing Zone in % effluent

Formulas used in aquatic life water quality screen (dilution type WLA):

Streams: $$\text{Dilution Factor} = \frac{Qe}{(Qrc \times 0.6463 \times Fs + Qe)}$$

$$\text{WLA a,c,h} = \frac{Cr}{\text{Dilution Factor}} - \frac{(Fs \times Qrc \times 0.6463 \times Cu)}{Qe}$$

Static water bodies (in the absence of a site specific dilution):

Discharge from a pipe:

$$\text{Critical Dilution} = \frac{(2.8)\, Pw\, \pi^{1/2}}{Pf}$$

$$\text{WLA} = \frac{(Cr-Cu)\, Pf}{(2.8)\, Pw\, \pi^{1/2}}$$

Discharge from a canal:

$$\text{Critical Dilution} = \frac{(2.38)(Pw^{1/2})}{(Pf)^{1/2}}$$

$$\text{WLA} = \frac{(Cr-Cu)\, Pf^{1/2}}{2.38\, Pw^{1/2}}$$

Formulas used in human health water quality screen, human health non-carcinogens (dilution type WLA):

Streams:

$$\text{Dilution Factor} = \frac{Qe}{(Qrc \times 0.6463 + Qe)}$$

$$\text{WLA a,c,h} = \frac{Cr}{\text{Dilution Factor}} - \frac{(Qrc \times 0.6463 \times Cu)}{Qe}$$

Formulas used in human health water quality screen, human health carcinogens (dilution type WLA):

$$\text{Dilution Factor} = \frac{Qe}{(Qrh \times 0.6463 + Qe)}$$

$$\text{WLA a,c,h} = \frac{Cr}{\text{Dilution Factor}} - \frac{(Qrh \times 0.6463 \times Cu)}{Qe}$$

Static water bodies in the absence of a site specific dilution (human health carcinogens and human health non-carcinogens):

Discharge from a pipe:

$$\text{Critical Dilution} = \frac{(2.8)\, Pw\, \pi^{1/2}}{Pf}$$

$$\text{WLA} = \frac{(Cr-Cu)\, Pf^{*}}{(2.8)\, Pw\, \pi^{1/2}}$$

Discharge from a canal:

$$\text{Critical Dilution} = \frac{(2.38)(Pw^{1/2})}{(Pf)^{1/2}}$$

$$\text{WLA} = \frac{(Cr-Cu)\, Pf^{1/2*}}{2.38\, Pw^{1/2}}$$

* Pf is set equal to the mixing zone distance specified in LAC 33:IX.1115 for the static water body type, i.e., lake, estuary, Gulf of Mexico, etc.
If a site specific dilution is used, WLA are calculated by subtracting Cu from Cr and dividing by the site specific dilution for human health and aquatic life criteria.

$$WLA = \frac{(Cr-Cu)}{\text{site specific dilution}}$$

Longterm Average Calculations:
LTAa = WLAa X 0.32
LTAc = WLAc X 0.53
LTAh = WLAh

WQBL Calculations:

Select most limiting LTA to calculate daily max and daily avg WQBL

If aquatic life LTA is more limiting:

Daily Maximum = Min(LTAa, LTAc) X 3.11
Monthly Average = Min(LTAc, LTAc) X 1.31

If human health LTA is more limiting:

Daily Maximum = LTAh X 2.38
Monthly Average = LTAh

Mass Balance Formulas:

mass (lbs/day): (ug/L) X 1/1000 X (flow, MGD) X 8.34 = lbs/day

$$\text{concentration(ug/L)}: \frac{\text{lbs/day}}{\text{(flow, MGD) X 8.34 X 1/1000}} = \text{ug/L}$$

The following is an explanation of the references in the spreadsheet.

(*1) Parameter being screened.

(*2) Instream concentration for the parameter being screened in ug/L. In the absence of accurate supporting data, the instream concentration is assumed to be zero (0).

(*3) Monthly average effluent value in concentration units of ug/L or mass units of lbs/day. Units determined on a case-by-case basis as appropriate to the particular situation.

(*4) Daily maximum value in concentration units of ug/L or mass units of lbs/day. Units determined on a case-by-case basis as appropriate to the particular situation.

(*5) Minimum analytical Quantification Levels (MQL's). Established in a letter dated January 27, 1994 from Wren Stenger of EPA Region 6 to Kilren Vidrine of LDEQ and from the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". The applicant must test for the parameter at a level at least as sensitive as the specified MQL. If

this is not done, the MQL becomes the application value for screening purposes if the pollutant is suspected to be present on-site and/or in the waste stream. Units are in ug/l or lbs/day depending on the units of the effluent data.

(*6) States whether effluent data is based on 95th percentile estimation. A "1" indicates that a 95th percentile approximation is being used, a "0" indicates that no 95th percentile approximation is being used.

(*7) 95th percentile approximation multiplier (2.13). The constant, 2.13, was established in memorandum of understanding dated October 8, 1991 from Jack Ferguson of Region 6 to Jesse Chang of LDEQ and included in the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". This value is screened against effluent Water Quality Based Limits established in columns (*18) - (*21). Units are in ug/l or lbs/day depending on the units of the measured effluent data.

(*8) LAC 33.IX.1113.C.6, Table 1, Numerical Criteria for Specific Toxic Substances, freshwater (FW) or marine water (MW) (whichever is applicable) aquatic life protection, acute criteria. Units are specified. Some metals are hardness dependent. The hardness of the receiving stream shall generally be used, however a flow weighted hardness may be determined in site-specific situations using the following formula: (Effluent Hardness X ZID Dilution + Receiving Stream Hardness X (1-ZID Dilution)). Dissolved metals are converted to Total metals using partition coefficients in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Similar to hardness, the TSS of the receiving stream shall generally be used, however, a flow weighted TSS may be determined in site-specific situations using the following formula: (Effluent TSS X ZID Dilution + Receiving Stream TSS X (1-ZID Dilution)).

Hardness Dependent Criteria:

Metal	Formula
Cadmium	$e^{(1.1280[\ln(\text{hardness})] - 1.6774)}$
Chromium III	$e^{(0.8190[\ln(\text{hardness})] + 3.6880)}$
Copper	$e^{(0.9422[\ln(\text{hardness})] - 1.3884)}$
Lead	$e^{(1.2730[\ln(\text{hardness})] - 1.4600)}$
Nickel	$e^{(0.8460[\ln(\text{hardness})] + 3.3612)}$
Zinc	$e^{(0.8473[\ln(\text{hardness})] + 0.8604)}$

Dissolved to Total Metal Multipliers for Freshwater Streams (TSS dependent):

Metal	Multiplier
Arsenic	$1 + 0.48 \times TSS^{-0.73} \times TSS$
Cadmium	$1 + 4.00 \times TSS^{-1.13} \times TSS$
Chromium III	$1 + 3.36 \times TSS^{-0.93} \times TSS$
Copper	$1 + 1.04 \times TSS^{-0.74} \times TSS$
Lead	$1 + 2.80 \times TSS^{-0.80} \times TSS$
Mercury	$1 + 2.90 \times TSS^{-1.14} \times TSS$
Nickel	$1 + 0.49 \times TSS^{-0.57} \times TSS$
Zinc	$1 + 1.25 \times TSS^{-0.70} \times TSS$

Dissolved to Total Metal Multipliers for Marine Environments (TSS dependent):

Metal	Multiplier
Copper	$1 + (10^{4.86} \times TSS^{-0.72} \times TSS) \times 10^{-6}$
Lead	$1 + (10^{6.06} \times TSS^{-0.85} \times TSS) \times 10^{-6}$
Zinc	$1 + (10^{5.36} \times TSS^{-0.52} \times TSS) \times 10^{-6}$

If a metal does not have multiplier listed above, then the dissolved to total metal multiplier shall be 1.

(*9) LAC 33.IX.1113.C.6, Table 1, Numerical Criteria for Specific Toxic Substances, freshwater (FW) or marine water (MW) (whichever is applicable) aquatic life protection, chronic criteria. Units are specified. Some metals are hardness dependent. The hardness of the receiving stream shall generally be used, however a flow weighted hardness may be determined in site-specific situations using the following formula: (Effluent Hardness X MZ Dilution + Receiving Stream Hardness X (1 - MZ Dilution)). Dissolved metals are converted to Total metals using partition coefficients in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Similar to hardness, the TSS of the receiving stream shall generally be used,

however, a flow weighted TSS may be determined in site-specific situations using the following formula: (Effluent TSS X MZ Dilution + Receiving Stream TSS X (1-MZ Dilution)).

Hardness dependent criteria:

Metal	Formula
Cadmium	$e^{(0.7852[\ln(\text{hardness})] - 3.4900)}$
Chromium III	$e^{(0.8473[\ln(\text{hardness})] + 0.7614)}$
Copper	$e^{(0.8545[\ln(\text{hardness})] - 1.3860)}$
Lead	$e^{(1.2730[\ln(\text{hardness})] - 4.7050)}$
Nickel	$e^{(0.8460[\ln(\text{hardness})] + 1.1645)}$
Zinc	$e^{(0.8473[\ln(\text{hardness})] + 0.7614)}$

Dissolved to total metal multiplier formulas are the same as (*8), acute numerical criteria for aquatic life protection.

(*10) LAC 33.IX.1113.C.6, Table 1, Numerical Criteria for Specific Toxic Substances, human health protection, drinking water supply (HHDW), non-drinking water supply criteria (HHNDW), or human health non-primarry contact recreation (HHNPCR) (whichever is applicable). A DEQ and EPA approved Use Attainability Analysis is required before HHNPCR is used, e.g., Monte Sano Bayou. Units are specified.

(*11) C if screened and carcinogenic. If a parameter is being screened and is carcinogenic a "C" will appear in this column.

(*12) Wasteload Allocation for acute aquatic criteria (WLAa). Dilution type WLAa is calculated in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Negative values indicate that the receiving water is not meeting the acute aquatic numerical criteria for that parameter. Units are in ug/L. Dilution WLAa formulas for streams:

$$WLAa = (Cr/\text{Dilution Factor}) - \frac{(Fs \times Qrc \times 0.6463 \times Cu)}{Qe}$$

Dilution WLAa formulas for static water bodies:

WLAa = (Cr-Cu)/Dilution Factor)
Cr represents aquatic acute numerical criteria from column (*8).
If Cu data is unavailable or inadequate, assume Cu=0

(*13) Wasteload Allocation for chronic aquatic criteria (WLAc). Dilution type WLAc is calculated in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Negative values indicate that the receiving water is not meeting the chronic aquatic numerical criteria for that parameter. Units are in ug/L. Dilution WLAc formula:

$$WLAc = (Cr/\text{Dilution Factor}) - \frac{(Fs \times Qrc \times 0.6463 \times Cu)}{Qe}$$

Dilution WLAc formulas for static water bodies:

WLAc = (Cr-Cu)/Dilution Factor)

Cr represents aquatic chronic numerical criteria from column (*9).
If Cu data is unavailable or inadequate, assume Cu=0

(*14) Wasteload Allocation for human health criteria (WLAh). Dilution type WLAh is calculated in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Negative values indicate that the receiving water is not meeting the human health numerical criteria for that parameter. Units are in ug/L. Dilution WLAh formula:

$$WLAh = (Cr/\text{Dilution Factor}) - \frac{(Fs \times Qrc,Qrh \times 0.6463 \times Cu)}{Qe}$$

Dilution WLAh formulas for static water bodies:

WLAh = (Cr-Cu)/Dilution Factor)

Cr represents human health numerical criteria from column (*10).

If Cu data is unavailable or inadequate, assume Cu=0

(*15) Long Term Average for aquatic numerical criteria (LTAa). WLAa numbers are multiplied by a multiplier specified in the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards" which is 0.32. WLAa X 0.32 = LTAa

(*16) Long Term Average for chronic numerical criteria (LTAc). WLAc numbers are multiplied by a multiplier specified in the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards" which is 0.53. WLAc X 0.53 = LTAc

(*17) Long Term Average for human health numerical criteria (LTAh). WLAh numbers are multiplied by a multiplier specified in the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards" which is 1. WLAc X 1 = LTAh

(*18) Limiting Acute, Chronic or Human Health LTA's. The most limiting LTA is placed in this column. Units are consistent with the WLA calculation.

(*19) End of pipe Water Quality Based Limit (WQBL) maximum 30-day monthly average in terms of concentration, ug/L. If aquatic life criteria was the most limiting LTA then the limiting LTA is multiplied by 1.31 to determine the average WQBL ($LTA_{\text{limiting aquatic}} \times 1.31 = WQBL_{\text{daily average}}$). If human health criteria was the most limiting criteria then $LTAh = WQBL_{\text{daily average}}$.

(*20) End of pipe Water Quality Based Limit (WQBL) 30-day daily maximum in terms of concentration, ug/L. If aquatic life criteria was the most limiting LTA then the limiting LTA is multiplied by 3.11 to determine the daily maximum WQBL ($LTA_{limiting\ aquatic}$ X 3.11 = $WQBL_{daily\ max}$). If human health criteria was the most limiting criteria then LTAh is multiplied by 2.38 to determine the daily maximum WQBL ($LTA_{limiting\ aquatic}$ X 2.38 = $WQBL_{daily\ max}$).

(*21) End of pipe Water Quality Based Limit (WQBL) maximum 30-day monthly average in terms of mass, lbs/day. The mass limit is determined by using the mass balance equations above. Daily average WQBL, ug/l/1000 X facility flow, MGD X 8.34 = daily average WQBL, lbs/day.

(*22) End of pipe Water Quality Based Limit (WQBL) 30 day daily maximum in terms of mass, lbs/day. Mass limit is determined by using the mass balance equations above. Daily maximum WQBL, ug/l/1000 X facility flow, MGD X 8.34 = daily maximum WQBL, lbs/day.